**GMR INSTITUTE OF TECHNOLOGY, RAJAM**

(An Autonomous Institution, Accredited by NBA of AICTE, NAAC of UGC & an ISO 9001:2015 Institution)

**Standard Operating Procedure (SOP)**

**Name of the Event**: Water Rocketry

**Duration of Event**: 3 hours

**Expected No of Registrations**: 25 teams

**Date of the Event:** 16-02-2024

**About the Event**:

Water rocketry involves creating rockets using water as a propellant. These rockets typically consist of a plastic bottle partially filled with water, pressurized air, and a launch system. When the air pressure builds up inside the bottle, it forces the water out through a nozzle, generating thrust and launching the rocket into the air.

It consists of two rounds

**Round 1: Range test at certain pressure**

* The rocket has to travel a minimum cutoff distance of 50 m according to the pressure given. The projection angle is up to the participants.
* The points will be considered according to the following relation:
* Total Points = Range (in metres)/5.

**Round2: Reaching the target**

* Tests the stability and accuracy of the rocket towards the target.
* Two chances will be provided for launching the rocket.
* Scores will be based on the Target zone on which the rocket lands.
* Total Points = P(round 1) + (time Taken).
* Eliminative round.

**Round 3: Duration Challenge**

* Rockets designed to achieve the longest possible flight duration.
* This often involves balancing the rocket's design to reduce air resistance and extend flight time.
* Scores will be allocated according to the judges.

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| **Venue** | **Duration** | **Faculty Coordinator** | **Student Coordinator** |
| Foot ball ground | 3 Hours | Dr. U Sudhakar | P. Tharun  Gowtham |

**Guidelines of the Event:**

* Maximum of 3 participants in each team. Individual participation is also allowed.
* All energy given to the rocket must come only from water pressure combination. No other source of energy is allowed.
* The teams will be disqualified/given another chance to remodel if their model is found to be dangerous in any way. No glass or sharp objects should be used in making the rockets.
* Water rockets have multiple stages. Parachute, gliding and other mechanical launch mechanisms are allowed. Booster mechanisms are allowed as well.
* You are only allowed to use plastic bottles specifically designed for holding pressure, or that have been pressure tested (for example carbonated-drink bottles).
* More than one bottle can be used but the maximum capacity of the bottle/bottles should be 2.5L. It is not necessary for both the bottles to be identical.
* Only water should be used as the working fluid. No other fluid is allowed. Participants should only use the water provided by organizers.
* Foot pumps will be provided by the organizers, this pump is compatible with standard bike valves. Participants must only use the pump provided by the organizers.
* Participants can make different models for different rounds but the volume and the bottles provided should be the same.
* Use of electronic components and chemical explosives is banned.

**Budget:**

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| **Event** | **Registration fee** | **Registrations expected** | **Prize money** |
| Water Rocketry | 300/- | 25 teams | 1st prize – 3,000/-  2nd prize -1,500/- |

Signature of Faculty Signature of the Central Signature of the

Coordinator ISTE coordinator HOD

Signature of the Associate Dean

(Student Affairs)